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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,962	12/13/2001	Gerald C. Monagan	101337-0015	4619
21125	7590	12/10/2003	EXAMINER	
NUTTER MCCLENNEN & FISH LLP WORLD TRADE CENTER WEST 155 SEAPORT BOULEVARD BOSTON, MA 02210-2604			CONLEY, SEAN E	
			ART UNIT	PAPER NUMBER
			1744	

DATE MAILED: 12/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/022,962	MONAGAN, GERALD C.	
	Examiner	Art Unit	
	Sean E Conley	1744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/13/01, 3/27/02, 3/28/02.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-11 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 7-13 of U.S. Patent No. 6,613,277 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of U.S. Pat. 6,613,277 B1 are obvious in view of the claims of the applicant's present invention.

Regarding applicant's claims 1 and 9-11, claims 1 and 2 of U.S. Pat. 6,613,277 B1 disclose a housing having an irradiation chamber and an ultraviolet radiation generator comprising at least one radiation source. Also, disclosed is a means for passing air through the irradiation chamber and the ultraviolet radiation generator is mounted in the chamber for irradiating the air passing through the chamber. The

radiation source has a first emitting region generating a first wavelength of ozone-producing radiation and a second emitting region for generating radiation within a second wavelength band of germicidal radiation. Furthermore, within the irradiation chamber is an optical isolator that is coated with a titanium catalytic element.

Regarding applicant's claims 2-8, the limitations recited in these claims are also disclosed in claims 7-13 of U.S. Pat. 6,613,277 B1.

3. Claims 1-8 and 12 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 5, 9-13, 16 and 19 of U.S. Patent No. 5,601,786 in view of WO 96/37281.

U.S. Pat. 5,601,786 discloses in claims 1, 5, 9-13, 16 and 19 the applicant's claimed invention as recited in claims 1-8 and 12, except for an air purification system that comprises a housing having a catalytic titanium element.

WO 96/37281 discloses an apparatus for purifying air by means of an activated photocatalyst such as titanium dioxide. The apparatus comprises a housing (1) having an inlet (2) and outlet (4) for circulating air. A circulating means (5) such as a fan is mounted in the housing in order to circulate the air. In the housing is a filter (7) which has a photocatalyst fixed to a fibrous porous support, and an adjacent ultraviolet light source (13) for activating the photocatalyst. The ultraviolet light source also irradiates the air as it passes through the irradiation chamber (see figure 1; page 4, line 8 to page 6, line 8; and page 10, line 26 to page 12, line 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of U.S. Pat. 5,601,786 and include a titanium catalytic element adjacent the ultraviolet lamps as taught by WO 96/37281, in order to further enhance air purification by exposing the titanium catalytic element to UV radiation and thus causing a photocatalytic reaction which reduces pollutants in the air stream.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1, 7, 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 96/37281.

WO 96/37281 discloses an apparatus for purifying air by means of an activated photocatalyst such as titanium dioxide. The apparatus comprises a housing (1) having an inlet (2) and outlet (4) for circulating air. A circulating means (5) such as a fan is mounted in the housing in order to circulate the air. In the housing is a filter (7) which has a photocatalyst fixed to a fibrous porous support, and an adjacent ultraviolet light source (13) for activating the photocatalyst. The ultraviolet light source also irradiates the air as it passes through the irradiation chamber (see figure 1; page 4, line 8 to page 6, line 8; and page 10, line 26 to page 12, line 2).

6. Claims 1, 5-8 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Goswami (U.S. Pat. 5,835,840).

Goswami discloses a system to disinfect and detoxify indoor duct-transported air. The air purification system can be utilized in combination or independently with a heating or air conditioning duct system. The air purification system (10) includes a housing (18) having an irradiation chamber comprising a bank of lamps (24) and a duct liner (29) coated with a titanium dioxide catalytic element. Also, disclosed is a photocatalyst coated mesh or matrix of surfaces (28). A fan (65) circulates the air through the system so that the air is exposed to the titanium dioxide photocatalyst as well as the irradiation chamber (24). The irradiation chamber comprises a plurality of UV lamps connected to an electrical source by way of electrical leads (25) and (26).

The UV rays from lamps (24) strike the mesh (28) or the coated liner (29) which is coated with the titanium catalyst. The UV rays activate the catalyst and cause a reduction of pollutants in the air (see figures 1, 3 and 4, and col. 4, lines 6-56).

Additionally, the system has particle particle/aerosol filters (12) for filtering the air as well as heating/cooling coils (56) for either heating or cooling the air as it passes through the air purification system (see col. 3, line 61 to col. 4, line 5).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 96/37281 as applied to claim 1 above, and further in view of Schroeder (U.S. Pat. 6,391,272 B1) and Goldstein (U.S. Pat. 4,210,429).

WO 96/37281 does not specifically disclose a power controller capable of communication with an AC power source or a pollution detector and a system activator for selectively powering the radiation source in response to a pollutant indicator signal received from the detector.

Schroeder discloses a method and apparatus for cleaning exhaust air containing oxidizable pollutants. The system has an exhaust air duct (10) and a first reaction zone (12) in duct (10) where a plurality of ultraviolet radiators (14, 14') are housed. The first radiator (14) emits UV radiation having a wavelength of less than 300nm. The second radiator (14') emits UV radiation having a wavelength of about 185nm which promotes the formation of ozone. The reaction zone (12) is provided with an optical reflective coating (16) which reflects the UV radiation and serves to increase the intensity of the radiation exposure (see column 4, lines 54-67). Alternatively, Schroeder discloses that it is possible to use a catalyst comprising a coating of catalytically active metal oxides provided on a support material such as active carbon, pumice, zeolites or clay. Examples of suitable catalytically active metal oxides include oxides of Mn, Fe, Ni, Ti and/or Zr (see col. 3, lines 37-52). Exhaust air leaving the first reaction zone (12) passes into a second reaction zone or chamber (18) which contains a porous bed of an oxidation catalyst (20). Then the air is passed to a third reaction zone (22) which contains at least one corona discharge electrode (24) for ionizing the exhaust air (see column 5, lines 1-15).

Exhaust duct (20) is also provided with an optional pollutant sensor (30), which may be a conventional hydrocarbon sensor, for measuring the pollutant level in the

exhaust air. The output of sensor (30) is communicated to a regulator (32), which in turn adjusts the power supply (34) of UV radiators (14, 14') to match the output of the radiators to the hydrocarbon concentration in the exhaust air stream for optimum operating efficiency and pollutant removal (see column 5, 16-25). Formaldehyde is an example of a hydrocarbon.

Goldstein discloses an air purifier for removing irritating or harmful impurities from the air. The purifier comprises a housing (10) having an inlet (20). Shown in figure 1 is an electrical cord (28) and associated plug (29) for connection to a conventional 110 volt AC outlet. The controls for the air purifier are also shown in figure 1 and are on the front wall (12) of the housing. They include a two-position switch (30), which is an on-off switch, and two-position switch (32), which is a high-low switch for controlling blower speed of blower (42) (see column 3, lines 10-30). Inside the housing is a germicidal chamber (46), which includes germicidal ultraviolet lamps (70) for treating the air (see col. 3, lines 45-50 and col. 4, lines 26-32).

Therefore, it would have been obvious to one having ordinary level of skill in the art at the time the invention was made to modify the air purifier of WO 96/37281 and include a means of detecting pollutants in the air stream and further powering the ultraviolet radiation sources in response to the detected pollutants as taught by Schroeder, in order to extend the service life of the catalysts and that of the ultraviolet radiators which would result in a cost savings.

Additionally, it would have been obvious to one having ordinary skill in the art to further modify the air purifier of WO 96/37281 to include a power controller capable of

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communication with an AC power source as taught by the device of Goldstein, which uses an electrical cord and associated plug for connection to a conventional AC outlet in order to power the air purifier.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. 5,656,242 to Morrow et al.

U.S. Pat. 5,919,422 to Yamanaka et al.

U.S. Pat. 5,948,355 to Fujishima et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean Conley, whose telephone number is (703) 305-2430. Beginning December 16, 2003, the examiners phone number will change to (571) 272-1273. The examiner can normally be reached on Monday-Friday 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Robert Warden, can be reached at (703) 308-2920. The Unofficial fax phone number for this group is (703) 305-7719. The Official fax phone number for this Group is (703) 872-9310. The direct fax number to the examiner is (703)-746-8859. Beginning December 16, 2003, the direct fax to the examiner will change to (571)273-1273.

When filing a FAX in Technology Center 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communications with the PTO that are not for entry into the file of the application. This will expedite the processing of your papers.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [robert.warden@uspto.gov]. All Internet e-mail communications will be made of record in the application file. PTO employees will not communicate with applicant via internet e-mail where sensitive data will be exchanged or where there exists a possibility that sensitive data could be identified unless there is of record express waiver of the confidentiality requirements under 35 U.S.C. 122 by the applicant. See the Interim Internet Usage Policy published by the Patent and Trademark Office Official Gazette on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist, whose telephone number is (703) 308-0661.

SEC *AC*

November 19, 2003

Robert J. Warden, Jr.